Appl. No. 10/804,758
Amdt. dated Mar. 7, 2008
Reply to Office action of Dec. 7, 2007

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-13. (canceled)

14. (currently amended) A sensor system for controlling a vehicle steering system, which sensor system comprises:

a global navigation satellite sensor (GNSS) attitude subsystem including a receiver and multiple antennas connected to said receiver at a fixed spacing, said GNSS attitude subsystem computing ~~reference~~ vehicle position and attitude ~~angles~~;

a yaw gyroscope connected to said GNSS attitude subsystem and configured to derive and provide an output including a yaw angular rate of change;

~~said GNSS attitude subsystem including a function~~ means for calibrating bias and scale factor errors in the yaw gyroscope using said reference attitude angles; and

a steering control subsystem connected to said yaw gyroscope and said GNSS attitude subsystem and using said yaw angle and yaw angle rate of change outputs from said yaw gyroscope for computing and outputting steering control commands to the vehicle steering system from the current position and heading to the desired position and heading; and

means for automatically calibrating said steering control commands using GNSS-derived vehicle position.

15. (canceled)

16. (currently amended) The system according to claim 14, which includes:

a roll gyroscope connected to said GNSS attitude subsystem and configured to derive and provide an output including a roll anglular rate of change:

said GNSS attitude subsystem including a function for calibrating bias and scale factor errors in the roll gyroscope using said reference attitude angles; and

[[a]] said steering control subsystem connected to said ~~GNSS attitude subsystem~~ roll gyroscope and using said roll angle rate of change output from said roll gyroscope for computing and outputting steering control commands to the vehicle steering system.

17. (original) The system according to claim 16, which includes:

said roll gyroscope output including a roll angle; and

said steering control subsystem using said roll angle output from said roll gyroscope for computing and outputting steering control commands to the vehicle steering system.

18. (original) The system according to claim 16, which includes:

said GNSS attitude subsystem deriving said steering control commands from a combination of yaw and roll gyroscope outputs and GNSS-derived attitude reference yaw and roll angles.

19. (original) The system according to claim 18, which includes:

said GNSS attitude subsystem deriving a roll angle;

and said steering control system using said roll angle to compensate for vehicle roll in said steering control commands.

20. (original) The system according to claim 19, which includes:

said roll angle compensation function being enhanced by said roll gyroscope output.

21. (currently amended) A method of controlling a vehicle steering system, which comprises the steps of:

providing a global navigation satellite sensor (GNSS) attitude subsystem including a receiver and multiple antennas connected to said receiver at a fixed spacing;

computing ~~reference~~ vehicle position and attitude ~~angles~~ with said GNSS attitude subsystem;

providing a yaw gyroscope connected to said GNSS attitude subsystem;

configuring said yaw gyroscope to derive and provide an output including a yaw angle and yaw angle rate of change and deriving and providing such output;

~~said GNSS attitude subsystem calibrating~~ reducing bias and ~~scale factor~~ drift errors in said yaw gyroscope using said ~~reference~~ vehicle attitude ~~angles~~;

~~and~~

using said yaw angle and said yaw angle rate of change output from said yaw gyroscope for computing and outputting steering control commands to the vehicle steering

system from the current position and heading to the desired position and heading; and

automatically calibrating said steering control commands using GNSS-derived vehicle position.